AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for forming a semi-conductor material, comprising:

forming a donor substrate constructed of GaAs;

providing a receiver substrate;

implanting nitrogen into the donor substrate to form an implanted layer comprising GaAs and nitrogen;

bonding the implanted layer to the receiver substrate;

annealing the implanted layer to form GaAsN nanostructures and nitrogen micro-blisters in the implanted layer; and

cleaving the implanted layer from the donor substrate.

2. (Original) The method according to claim 1, wherein the implanting step comprises implanting the nitrogen with a high energy ion implantation method.

3. (Original) The method according to claim 2, wherein the implanting step comprises maintaining the implanted layer at a temperature of about 300ºC and implanting nitrogen at a concentration of about $5X10^{17}cm^{-2}$.

4. (Original) The method according to claim 1, wherein the step of annealing further comprises heating the implanted layer to a temperature of about between 750 and 850ºC for a time of about 30 seconds.

5. (Original) The method according to claim 1, wherein a retained dose from the implantation of nitrogen in the implanted layer is about $1.7x10^{22}$ N/cm^3.

6. (Original) The method according to claim 1, wherein a thickness of the implanted layer is about .15 μm.

7. (Original) The method according to claim 1, wherein the step of forming the donor substrate comprises:

forming a GaAs layer; and

forming an epitaxial GaAs layer by an epitaxial method on the GaAs layer.

8. (Original) The method according to claim 7, wherein the nitrogen is implanted into the epitaxial GaAs layer to form the implanted layer in the implanting step.

9. (Original) The method according to claim 8, wherein the epitaxial GaAs layer is thicker than the implanted layer.

10. (Original) The method according to claim 1, further comprising polishing a cleaved area of the implanted layer after the cleaving step.

11. (Original) The method according to claim 1, wherein the semi-conductor material is used in a long wave length light emitter or detector, high performance electronic device, or a high efficiency solar cell.

12. (Original) The method according to claim 1, wherein the receiver substrate is formed of GaAs.

13. (Original) The method according to claim 1; wherein the GaAsN are micro-structures sized 2-10 nm.

14. (Original) The method according to claim 1, further comprising:

providing a second receiver substrate;

implanting nitrogen into a remainder of the donor substrate to form a second implanted layer after the cleaving step, wherein the second implanted layer comprises GaAs and nitrogen;

bonding the second implanted layer to the second receiver substrate;

annealing the second implanted layer to form GaAsN and nitrogen micro-blisters in the second implanted layer; and

cleaving the second implanted layer from the donor substrate.

15. (Original) A narrow energy band gap semi-conductor constructed according to the method of Claim 1.

16. (Original) A long wave length light emitter constructed according to the method of Claim 1.

17. (Original) A long wave light detector constructed according to the method of Claim 1.

18. (Original) A high performance electronic device constructed according to the method of Claim 1.

19. (Original) A semi-conductor material, comprising:

a donor substrate constructed of GaAs;

an epitaxial GaAs layer disposed on one side of the donor substrate; and

an implanted layer comprising GaAs and nitrogen disposed in the epitaxial GaAs layer.

20. (Original) The semi-conductor material according to claim 19, further comprising a receiver substrate bonded to the implanted layer.

21. (Original) The semi-conductor material according to claim 19, wherein a dose of nitrogen in the implanted layer is about 1.7×10^{22} N/cm^3.

22. (Original) The semi-conductor material according to claim 19, wherein a thickness of the implanted layer is about .15 μm.